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EXAMINER
ZIMMER, MARC S

ART UNIT	PAPER NUMBER
1712	

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Please find below and/or attached an Office communication concerning this application or proceeding.

8/2 7

Office Action Summary	Application No. 09/776,383	Applicant(s) KO ET AL.	
	Examiner Marc S. Zimmer	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 May 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4 and 12-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *4 and 12-16* is/are allowed.

6)☒ Claim(s) *17-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

In view of the Examiner's indication of allowable subject matter in claim 4, Applicant has amended claim 4 to include all of the limitations of the base claim and claim 1 has been cancelled. Applicant has also composed new process claims 12-16, which depend from claim 4.

In addition to claims 4 and 12-16, new claims 17-27 have been introduced. Claims 17-23 are directed to a product and contain product-by-process language. Claims 24-27 mirror original claims 8-11 in scope and depend from new claim 17.

Claim Objections

In claims 14, the variable M_2 has been defined in two different ways that conflict with one another whereas a definition for M_1 has not been provided. Clearly, one mention of M_2 was supposed to have been M_1. Correction is required.

Claim Analysis

Claim 4 adds the proviso to original claim 1, presently cancelled, that component (b) is prepared by reacting a silane monomer bearing Si-H with a silane monomer having an ethylenically unsaturated alkenyl group in the presence of a catalyst. Applicant is advised that the Examiner has, for the purpose of determining the claim's patentability, treated this action as part of the claimed process. That is, claim 4, as the Examiner has interpreted it, claims a process wherein component (b) is first prepared using the synthetic approach outlined in the final three lines of the claim. Subsequently, component (b) and (component (a) are reacted together in the presence of water and a catalyst. Therefore, the Examiner views the process as one having two steps wherein

the first step entails forming (b) and the second entails forming the organic silicate polymer having a flexible bridge unit.

Claims 17-23, to reiterate, are product-by-process claims wherein the process by which reactant (b) was obtained is set forth therein. The courts have instructed the Office as to how these claims are to be treated: "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process" *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Accordingly, the method by which (b) has been obtained is immaterial to a determination of patentability. As such, claims 17-23 and 24-27 are subject to rejection over the same references that were applied to original claims 1-11 as they are quite similar in scope.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 17 and 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Pluedemann, U.S. Patent Re. 34,675. Pluedemann discloses a primer composition wherein a conventional silane coupling agent selected from an extended list of

functionalized and non-functionalized organotrialkoxysilanes (col. 2, lines 60-68 through column 3, lines 1-17) is mixed with a disilyl crosslinking agent featuring a structure equivalent to that contemplated for component (b) of the claimed invention in an organic solvent medium. Examples of the molecular bridge that may be employed to join the two silane atoms of the latter reactant include a divalent alkylene radical of 1 to 8 carbon atoms or any of the divalent radicals portrayed in formulas (b) through (e) shown in column 4. Of these, methylene, ethylene, and phenylene radicals are considered most favorable (column 4, lines 62-64). As for claims 20-22, these claims have been rejected because they further limit an embodiment of M over which the Examiner had not based his rejection. That is, the Examiner has rejected claim 17 over Pleudemann in view of that reference's teaching of a bridged silane corresponding to (b) where M is an alkylene group. The fact that claims 20-22 disclose the embodiment wherein M is a cyclic oligomer in greater detail does not diminish the rejection over the other incarnations of M.

Claims 17 and 19-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al., U.S. Patent # 5,316,855. Wang teaches a coating composition that is used to render a polymer surface onto which it is applied abrasion resistant. The composition, described in column 2 is said to be comprised of a metal alkoxide sol based on silicon or another metal atom and an organosilicon compound having at least one trialkoxysilane group. In particular, they disclose the use of "bis-tri(lower)alkoxysilane-containing" materials that are alkoxysilane-terminated at more than one end such as 1,6 bis-(trimethoxysilyl)hexane. The metal alkoxide sol disclosed

by Wang would correspond with component (a) of the instant invention where m + n =0. In examples 4, 5, and 6, they describe the conditions under which the materials are reacted. Typically, the compounds are simply added to a water/alcohol mixture containing HCl as a catalyst and stirred at room temperature for a number of hours. Claims 20-22 are, again rejected, because they further limit an embodiment of M that was not the basis of the Examiner's rejection of the base claim. See the explanation offered in the previous paragraph.

Claims 17 and 19-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Uryu, JP 7-333208 A2. Uryu teaches a method for the preparation of spherical silicon-based particles for use as a stationary phase in liquid chromatography columns. The method entails reacting an orthosilicate with a disilyl alkane equivalent to component (b) of the instant invention. The reaction is performed in an alcohol solution in the presence of an acid catalyst according to the process outlined in page 2 of the computer-translated document. Claims 20-22 are, again rejected, because they further limit an embodiment of M that was not the basis of the Examiner's rejection of the base claim. See the explanation offered above.

Claims 17-22 and 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurosawa et al., U.S. Patent # 6,410,151. ~~Kurosawa et al., U.S. Patent # 6,410,151.~~ Kurosawa discloses a coating composition that may be employed to form interlayer insulating films on various substrates/articles of manufacture including semiconductors. The composition is comprised of two condensation products, components A and B, each of which is derived from the same starting materials but in

the presence of a different condensation catalyst. The first of said products is prepared from at least one (column 1, line 47) of the following silanes;

$$R_aSi(OR^1)_{4-a}, \quad \text{(i)}$$

$$Si(OR^2)_4, \text{ and} \quad \text{(ii)}$$

$$R^3_b(R^4O)_{3-b}\text{-}(R^7)_d\text{-}Si(OR^5)_{3-c}R^6_c \quad \text{(iii)}$$

wherein R^7 corresponds to an oxygen atom, a divalent alkylene group, or a divalent arylene group; in the presence of an alkali catalyst. To reiterate, these compounds may be employed alone or in combination according to column 7, lines 26-28. Notably, in those instances where R^7 denotes an alkylene/arylene group (column 6, lines 31-67 through column 7, lines 1-25), the third possible starting material is equivalent to component (b) of the instant invention. Likewise, compounds (i) and (ii) are chemically equivalent to component (a) of the instant invention hence the condensation product derived from either (i) or (ii) and (iii) is, by extension, equivalent to the organic silicate polymer contemplated in claim 17. Further, the condensation product obtained from these compounds is characterized as having a weight-average molecular weight of from 50,000 to 3,000,000 (column 8, lines 59-61).

The second component of the composition is also synthesized from (i), (ii), or (iii), and combinations thereof. The only distinguishing feature of said second component is that, whereas the first is prepared utilizing an alkali catalyst, the latter is synthesized in the presence of a metal chelate.

In columns 14, 15, and 16, numerous strategies for preparing components A and B are outlined. Thereafter, they describe methods for preparing films from the

compositions containing these materials. A composition having a solids content of between 2 and 50% (column 16, lines 22-23) may be introduced onto a substrate by one of several techniques including spin coating (column 16, line 40) after which the coated substrate is subjected to heating at temperatures of 450° C or less in an inert atmosphere to dry and cure the coating into a continuous film. As before, semiconductors are among the substrates onto which the coating may be applied.

Claims 20-22 are, again rejected, because they further limit an embodiment of M that was not the basis of the Examiner's rejection of the base claim. See the explanation offered above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pluedemann, U.S. Patent Re. 34,675. Pluedemann does not contemplate the utilization of a condensation catalyst. Nonetheless, it is ubiquitously recognized that said catalysts, e.g. acid/alkaline compounds and organotransition metal complexes of tin, titanium, aluminum, etc., may be employed where it is desired to accelerate the condensation reaction. Insofar as the product yielded from these two materials is employed as an adhesive, one of ordinary skill would immediately appreciate that it is

often beneficial to hasten the coupling of two interfaces by adding a polymerization catalyst to reduce manufacturing time and, hence, increase the economy of a process.

As for claim 6, Pluedemann advises that the two organosilicon materials may be used in a weight ratio of from 1:99 to 99:1.

Allowable Subject Matter

Claims 4 and 12-16 are allowable for the reasons provided in paper no. 6.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 703-605-1176. The examiner can normally be reached on Monday-Friday 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

June 3, 2003

Robert Dawson
Supervisory Patent Examiner
Technology Center 1700